

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. - 3. (canceled)

4. (currently amended): ~~A prospective abnormal shadow detecting system as defined in Claim 3~~ A prospective abnormal shadow detecting system comprising a prospective abnormal shadow detecting means which detects a prospective abnormal shadow in an image on the basis of image data representing the image and a prospective abnormal shadow information output means which outputs information on the prospective abnormal shadow detected by the prospective abnormal shadow detecting means, wherein the improvement comprises that
a malignancy judging means which judges whether the prospective abnormal shadow detected by the prospective abnormal shadow detecting means is malignant or benignant is provided, and
the prospective abnormal shadow information output means outputs the information on the prospective abnormal shadow in such a manner that whether the prospective abnormal shadow is malignant or benignant as judged by the malignancy judging means can be distinguished, and
in which the malignancy judging means judges whether the prospective abnormal shadow detected by the prospective abnormal shadow detecting means is malignant or benignant by obtaining a benignancy evaluation function value which is a value of an evaluation function for benignancy, a malignancy evaluation function value which is a value of an

evaluation function for malignancy, and a normalcy evaluation function value which is a value of an evaluation function for normalcy by defining feature values of the image data by a predetermined function, and

comparing the normalcy evaluation function value with the benignancy evaluation function value and the normalcy evaluation function value with the malignancy evaluation function value, and

in which the malignancy judging means obtains first and second likelihood ratios LR1 and LR2 which are respectively defined to be $LR1 = \text{normalcy evaluation function} / \text{malignancy evaluation function}$ and $LR2 = \text{normalcy evaluation function} / \text{benignancy evaluation function}$, and determines that the prospective abnormal shadow is malignant when the first likelihood ratio $LR1 > \text{the second likelihood ratio } LR2$ and at the same time, the first likelihood ratio $LR1 > \text{a first threshold value}$, and that prospective abnormal shadow is benignant when the first likelihood ratio $LR1 < \text{the second likelihood ratio } LR2$ and at the same time, the second likelihood ratio $LR2 > \text{a second threshold value}$, and otherwise that the prospective abnormal shadow is a shadow of a normal part.

5. - 6. (canceled)

7. (currently amended): ~~A method as defined in Claim 6 characterized by the steps of~~
A method of judging whether a prospective abnormal shadow detected on the basis of image data representing an image is malignant or benignant comprising the steps of
obtaining a benignancy evaluation function value which is a value of an evaluation function for benignancy, a malignancy evaluation function value which is a value of an evaluation function for malignancy, and a normalcy evaluation function value which is a value of

an evaluation function for normalcy by defining feature values of the image data by a predetermined function, and

comparing the normalcy evaluation function value with the benignancy evaluation function value and the normalcy evaluation function value with the malignancy evaluation function value, and

obtaining first and second likelihood ratios LR1 and LR2 which are respectively defined to be $LR1 = \text{normalcy evaluation function} / \text{malignancy evaluation function}$ and $LR2 = \text{normalcy evaluation function} / \text{benignancy evaluation function}$, and

determining that the prospective abnormal shadow is malignant when the first likelihood ratio $LR1 > \text{the second likelihood ratio } LR2$ and at the same time, the first likelihood ratio $LR1 > \text{a first threshold value}$, and that prospective abnormal shadow is benignant when the first likelihood ratio $LR1 < \text{the second likelihood ratio } LR2$ and at the same time, the second likelihood ratio $LR2 > \text{a second threshold value}$, and otherwise that the prospective abnormal shadow is a shadow of a normal part.

8. - 9. (canceled)

10. (currently amended): ~~An apparatus as defined in Claim 9~~ An apparatus for judging whether a prospective abnormal shadow detected on the basis of image data representing an image is malignant or benignant comprising

an evaluation function value calculating means which obtains a benignancy evaluation function value which is a value of an evaluation function for benignancy, a malignancy evaluation function value which is a value of an evaluation function for malignancy, and a

normalcy evaluation function value which is a value of an evaluation function for normalcy by defining feature values of the image data by a predetermined function, and

judging means which judges whether the prospective abnormal shadow is malignant or benignant by comparing the normalcy evaluation function value with the benignancy evaluation function value and the normalcy evaluation function value with the malignancy evaluation function value,

in which the judging means obtains first and second likelihood ratios LR1 and LR2 which are respectively defined to be $LR1 = \text{normalcy evaluation function} / \text{malignancy evaluation function}$ and $LR2 = \text{normalcy evaluation function} / \text{benignancy evaluation function}$, and determines that the prospective abnormal shadow is malignant when the first likelihood ratio $LR1 > \text{the second likelihood ratio } LR2$ and at the same time, the first likelihood ratio $LR1 > \text{a first threshold value}$, and that prospective abnormal shadow is benignant when the first likelihood ratio $LR1 < \text{the second likelihood ratio } LR2$ and at the same time, the second likelihood ratio $LR2 > \text{a second threshold value}$, and otherwise that the prospective abnormal shadow is a shadow of a normal part.

11. - 16. (canceled)